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ABSTRACT

Variables that affect persistence were investigated with a sample of community college students. A causal model was used that incorporates variables from the Bean-Metzner model. Persistence was defined as attainment of a vocational certificate, degree, or continued enrollment in 1980 in pursuit of such an outcome. Data on 1,210 students were obtained from the Cooperative Institutional Research Program surveys completed by students who entered as freshmen at a two-year institution in 1971. Analysis was conducted separately for both the 910 white students and the 300 nonwhite students. For the white students, variables that had significant effects on persistence include: academic integration, utility, satisfaction, and social integration. For the nonwhite students, variables that had significant effects include: academic integration, utility, and marital status. Academic integration was the most influential variable in both groups, followed by utility. Academic integration was measured by college grade point average and participation in an honor society, while utility measured how well college prepared respondents for work. Twelve references are included. (SW)

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Persistence and the Two-Year College Student

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This paper was presented at the annual meeting of the Association for the Study of Higher Education held at the Sheraton Inner Harbor Hotel in Baltimore, Maryland, November 21-24, 1987. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

College officials and researchers have been interested in explaining the college attendance decisions of students for some time. Though many have considered this topic, most studies that have been undertaken have centered on either the initial decision to attend college (as opposed to other post secondary school choices)or the college choice decision. By far the greatest amount of work has been done from the perspective of a single campus and has been disseminated only within the individual college communities. Most of this work was completed in efforts to answer administrative questions and lacks theoretical perspective. Pascarella (1980) tells us, "Prior to the 1970's, however, the vast majority of these studies were atheoretical." (p.2). This is not surprising given the pragmatic orientation of institution-based studies tied, in most cases, to questions of resource allocation.

Most of the early investigations were very narrow in scope. They dealt almost exclusively with concerns about college selection and were conducted primarily by those involved with the recruitment process. Next came queries about the factors that might help predict student success at given colleges. As investigators began to seek answers to these new questions, the shape of student behavior research started to change.

Since Spady's (1970) initial paper, the subject of college student persistence has received considerable attention from researchers. His work, based on Durkheim's (1961) theory of suicide, describes the dropout decision in a longitudinal fashion and explains the place of social interaction in this process. Building on Spady's work, Tinto's (1975) model is generally acknowledged to be the first useful attempt to develop a predictive theory to explain college dropout decisions. The model suggests that a student's decision to dropout is based on commitments to both general academic goals and the institution attended. These commitments are a function of background characteristics (e.g. family background, individual attributes, pre-college schooling) which lead to the development of an initial set of institutional and goal commitments. Initial commitments are filtered through an interactive set of academic and social systems within the college environment. This process results in a reorganized, updated commitment level to both general educational goals (B.A., M.A., Ph.D.) and to the student's educational institution. Tinto (1975) says "... it is the interplay between the individual's commitment to the goal of college completion and his commitment to the institution that determines whether or not the individual decides to drop out..." (p.96). This model provides a coherent and cohesive framework for researchers. It has generated a large number of studies and

continues to be the theoretical basis for much of the college student persistence research.

Drawing on the work of Tinto, Pascarella and Chapman looked at campus type differences in applying this model. Attempting to validate the model, Pascarella and Chapman (1983) used data from eleven different colleges (4 residential 4-year; 4 commuter 4-year; 3 commuter 2-year). Both goal and institutional commitment were found to have significant direct effects on persistence. The two other significant direct effects found were living on campus (positive) and attending a 2-year college (negative). In addition, social and academic integration were both found to have an indirect effect on persistence through their direct effects on goal and institutional commitment. While these findings generally confirm the model, the authors found interesting differences when the data were disaggregated by institution type.

Goal commitment, for example, was found to have a much greater effect on persistence than institutional commitment for students in the 2-year college setting. Also, while academic integration was found to have a significant direct effect on institutional commitment, social integration did not and neither academic nor social integration were found to directly effect goal commitment, as Tinto's model would suggest. These findings clearly indicate that, while Tinto's model has considerable power to explain the persistence behavior of college students, it may be wise to redefine the model for differing college settings.

Building on the work of Spady (1970), Tinto (1975), Pascarella (1980), Pascarella and Chapman (1983), and others, Bean and Metzner (1986) have proposed a longitudinal model of nontraditional student attrition. They acknowledge the importance of background, social integration and academic integration variables. In addition, they put forth environmental variables and psychological outcomes as constructs that have great influence on the attrition of nontraditional students. They reason that attrition is impacted most by academic success or failure, intent to leave, environmental variables, and background variables.

In attempting to be as comprehensive as possible, Bean and Metzner define the student of interest as one who is, "... older than 24, or does not live in a campus residence (e.g. is a commuter), or is a part-time student, or some combination of these factors..." (p. 489). While nontraditional students can be found in any type of postsecondary institution, community college populations are to a great extent comprised of nontraditional students. For example, in Illinois, a state with a large community college system, not one community college student lives on campus, the average student is about 30 years of age, and over 64% of the student body attends on a part-time basis. Bean and Metzner's definition of the nontraditional student, then, is

clearly broad enough to include virtually all community college students.

The purpose of this study is to estimate a causal model that incorporates some of the constructs from the Bean-Metzner model using data from a sample of community college students. Further, as the work of Smart and Pascarella (1986) would suggest, it may prove productive to explore the model's effect with various identifiable subgroups within the community college setting.

CAUSAL MODEL

Drawing on the work of those listed above, the initially proposed model includes six background variables: socio-economic status; sex; marital status; ethnicity; age; and educational goal. These variables are assumed to directly influence student academic integration, financial concern, sources of financial support, and social integration. Each of the preceding variables are expected to effect student satisfaction with the college experience and their perception of the usefulness of college. All of these variables are presumed to influence college persistence for community college students.

The seven Bean-Metzner background variables are represented in this study by six variables of which four duplicate those called for by Bean and Metzner. Their academic variables and academic outcome are represented by academic integration while financial concern and support serve as a proxy for Bean and Metzner's environmental variables. Their psychological variables construct is included through he use of the satisfaction and utility variables.

Within this study, unlike most studies of college student persistence, the ultimate dependent variable for this study, persistence, is defined as attainment of a vocational certificate, a degree or continued enrollment in 1980 in pursuit of such an outcome. Persistence has more commonly been defined as attainment of a Bachelor's degree, apparently assuming that earning this degree is the only reasonable "success" outcome of higher education. While this may be a good measure for those of traditional college age who attend four year colleges and universities, many community college students, even those who originally plan to pursue the Bachelor's degree, find themselves drawn to the other degree and certificate options available to them in the community college setting. Since completion of one of these other programs may be viewed as a successful educational experience, attainment of this level of formal training is herein used as bench mark of college success rather than failure. In a similar fashion, those who have not completed a program of study but have also not abandoned pursuit of a degree or certificate

have not failed. Therefore, those who were still in pursuit of such a program in 1980 were considered persisters.

METHOD

Sample

Data for this study were selected from the Cooperative Institutional Research Program (CIRP) responses to survey instruments that were completed by 10,326 students who entered college as freshmen in 1971. CIRP was sponsored jointly by the American Council on Education and the University of California, Los Angeles (Astin, 1982). In addition to completing the initial survey instrument, the respondents also filled out supplementary questionnaires in 1980 regarding their college experiences and whether or not they were still in degree or certificate programs. The sample used in this study was restricted to only those who indicated that they attended a two year institution in 1971 and had valid responses to the variables whose operational definitions are given in Table 1. This resulted in a final sample of 1210.

INSERT TABLE 1 HERE

Analyses

The estimation of direct and indirect effects implied by the model in this study was done in two parts. First, ordinary least-squares regression was used to estimate the coefficients of the seven structural equations defining the model. Each endogenous variable was regressed on all the exogenous and causally antecedent endogenous variables. This produced seven sets of regression coefficients representing the direct effects of the causal factors on the dependent measures. The indirect effects were calculated using GEMINI, a FORTRAN program, developed by Wolfle and Ethington (1985), which also estimates the statistical significance of the indirect effects in the model.

Since it is not uncommon to find that racial factors impact the various endogenous variables in models such as the one proposed (e.g. Astin, 1977; Smart and Pascarella, 1986), a preliminary analysis was conducted to determine if ethnic group

membership differentially influenced the variables in the model. This was accomplished by comparing the R-square values obtained by regressing the ultimate dependent variable on the causally antecedent variables and also following this same method with the addition of a set of interaction terms created by the cross-products of ethnicity and each of the endogenous variables. This procedure resulted in a statistically significant difference between the R-square values ($p < .01$). Therefore, separate analyses were conducted for white ($n = 910$) and nonwhite ($n = 300$) samples. Though it may have been preferable to conduct analyses on a greater array of ethnic groups, the sample failed to provide sufficient numbers of respondents to meaningfully separate out ethnic group membership to a finer degree.

RESULTS

Analyzing the raw data for the 1210 respondents, the model was estimated separately for both the white ($n = 910$) and nonwhite ($n = 300$) groups. Table 2 presents the correlations, means, and standard deviations for these twelve variables comprising the model.

INSERT TABLE 2 HERE

Tables 3 and 4 present the estimates of the parameters of the seven structural equations for the white and nonwhite groups, respectively. The regression weights may be interpreted as direct effects of the individual variables on the respective dependent variable when the effects of the remaining variables are held constant. The standardized partial-regression coefficients are also presented. The R-squares for the white and nonwhite groups, respectively were .169 and .240.

Figures 1 and 2 graphically represent the significant direct effects found. All significant direct effects are presented in an attempt to show the reader the paths of influence followed by those predictor variables that were found to have significant effects on the ultimate dependent variable.

INSERT TABLES 3 AND 4 AND FIGURES 1 AND 2 HERE

Table 5 represents the indirect effects and the total effects of the predictor variables on community college student persistence. The indirect effects represent the impact of the predictor variable on the ultimate dependent variable mediated through the intervening variables. The total effect is the sum of the direct and indirect effects for each of predictor variable in the structural equations.

INSERT TABLE 5 HERE

Within the white group, four variables were found to have significant direct effects on persistence. Academic integration had the greatest impact (beta =.195) on persistence. Utility (beta =.167), satisfaction (beta = .156), and social integration (beta =.019) were also found to have significant direct effects. In contrast, only three variables, academic integration (beta =.308), utility (beta =.251), and marital status (beta =-.148), reached significance in the nonwhite group.

Significant indirect effects were found for five variables in the white group: sex, academic integration, goal, social integration and financial concern (negative). The primary mediating variable for the indirect effect of sex is academic integration. The indirect effects of academic and social integration are mediated by satisfaction and utility, and those of goal are carried by academic and social integration through their effects on satisfaction and utility. Financial concern is mediated only by satisfaction. Figure 1 is a graphic representation of the direct effects (and, therefore,the indirect effects) of the variables in the white group model.

Only three variables were found to have significant indirect effects on persistence in the nonwhite group. Marital status, academic integration and social integration were all found to effect persistence through other variables. The indirect effects of marital status were carried through its strong effect on academic integration. Utility mediated the indirect effects of both academic and social integration. Figure 2 is a graphic depiction of the direct effects in the nonwhite model.

Academic integration was the single most influential variable in both groups. However, the impact of this variable in the nonwhite model was almost twice that of its influence in the white group. Similarly, utility was the second most influential variable in both groups but its importance in the nonwhite group was much greater than in the white group. The negative effect

found for marital status ranks it as the third most influential variable in for the nonwhite group while satisfaction and social integration were found to have significant indirect effects in the white group.

DISCUSSION

The results of this study are generally consistent with the findings of others who have investigated college student persistence. The overall R-square of .169 found for the white group compares reasonably well with the findings of other researchers [see Pascarella and Chapman (1983), Pascarella, Terenzini and Wolfle (1986), and Pascarella, Smart and Ethington (1986)] who found R-square values of, respectively, .17, .196, and .228.

Of even greater interest is the R-square of .240 found for the nonwhite group. Explanation of almost one-quarter of the variance in the dependent variable through the use of this model should encourage further investigation. Enhancing the uniqueness of this outcome is the fact that the nonwhite model resulted in a rather parsimonious presentation of the important variables. This is not to suggest that minority community college student persistence is a less complex process than white community college student persistence. Perhaps intervention strategies for this group of students could be devised that are somewhat more efficient, however. Minority student attrition at community colleges could be impacted more effectively through relatively simpler programs.

In both groups marriage had a positive influence on academic integration. Married students, both white and nonwhite, did better academically and the effect of marriage on academic integration was found to be roughly equivalent between the two groups. In the nonwhite model, however, academic integration has a much stronger effect on persistence than in the white model. Hence, we see a much stronger indirect influence of being married in the nonwhite group. To further confound the situation, the nonwhite group had a very strong negative direct effect of marriage on persistence. Therefore, nonwhite students are more likely to persist if they are not married, even though it appears that marriage has a marked influence on academic integration for minority students.

Academic and social integration were found to be significant variables in both the white and nonwhite models though social integration's influence on persistence for the nonwhite group was indirect and mediated through the student's perception of the usefulness of the college experience. Utility was found in both groups to have a positive influence and acted as the carrier of

some of the positive effects of academic and social integration.

The endogenous variables nearest to the ultimate dependent variable, satisfaction and utility, were both found to have direct effects for the white group. In the nonwhite group, however, only utility had a significant effect. This can be seen to reflect a relatively greater need for clearly "applicable knowledge" in the nonwhite group and, similarly, a greater weight on achieving a sense of satisfaction in the process among the white student group.

While the results of this study generally support the findings of others who investigated the persistence behavior of college students, they also support the primary concept of Bean and Metzner (1986) when they posited that nontraditional student populations could be better understood in the light of adapted theoretical models. Perhaps nontraditional students exhibit some very salient information about themselves relative to their persistence potential in the very type of institution that they choose for their education. In any event, further investigations should attempt to explore both nontraditional students and their subsets of distinctive groups.

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TABLE 1
Variable Definitions

Variables	Definitions
Socio-economic status (SES)	A three item measure computed by summing after standardizing the educational level of respondents' parents (mother and father) and family income level. There were twelve income levels (from "less than $4,000 to $40,000 or more" per year). Mother's and father's educational level was derived from responses to a six foil selection (from "grammar school or less" to "postgraduate degree"). The alpha, internal consistency estimate for this measure was 0.72.
SEX	Male/female coded as 1 = male; 2 - female.
Marital status (MARITAL)	A dichotomous variable describing the respondents' status in 1971 as either single (1) or married (2).
AGE	Respondents' age as of December 31, 1971 as measured on an eight level scale (from "16" to "26 or older").
GOAL	A measure of the 1971 highest degree aspirations of the respondents. A six level scale was used (from "none" to "professional degree").
Academic integration (ACINT)	A two item measure computed by summing after standardizing the respondents' 1980 information regarding participation in an honor society and college grade point average achieved. Undergraduate grade point average was answered using a six level scale (from "d or less" to "A- or more"). Honor society participation was simply dichotomous (yes = 2; no = 1). The alpha, internal consistency for this measure was 0.54).
Financial concern (CONS)	A single item measure of the respondents' concern about having adequate funds to finance his/her college education. A three item scale was utilized (from "none" to "major concern").
SUPPORT	A five item measure of work, grant and loan assistance needed to finance the respondents' college education. Respondents rated (from "not a source" to "major source") the importance of: part-time or summer work; savings from full-time work; scholarships and grants; NDEA, federal, or college loans; and other loans to their college financing plans. The five items were summed and yielded an alpha of 0.28 for this measure.

Social integration (SOCINT)	A six item measure of the degree to which respondents participated in the extra-curricular aspects of college life. In 1980, respondents answered either yes (2) or no (1) to questions about whether or not they: knew a professor or administrator outside the classroom; served as president of a student organization; served on a college committee; had a major part in a play; lettered in a varsity sport; and served as editor of a school publication. The items were summed and yielded an alpha, internal consistency measure of 0.41.
Satisfaction* (SATISF)	A single 1980 measure of the level of satisfaction the respondents had for the initial college attended in 1971. A three point scale was utilized (from "not satisfied" to "very satisfied").
UTILITY*	A single measure of how well college prepared the respondents for work. A four item scale was utilized (from "not well" to "very well").
PERSISTENCE	A measure that resulted from respondents' answers to two items, highest degree held in 1980 and/or 1980 degree pursuit activity. If a respondent indicated that they had attained a vocational certificate or higher degree (Associate's, Bachelor's, Master's, professional or Doctorate) by 1980, they were coded as a persister. Those who had not attained a certificate or degree and were not in pursuit of same, were coded as non-persisters.

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*It is understood that, in an ideal design, both satisfaction and utility measures would be taken at a time between the preceding variables and the dependent measure. This proved to be impossible and, therefore, these 1980 measures are used as proxies for student satisfaction and sense of the usefulness of their college preparation.

TABLE 2
Correlations, Means, & Standard Deviations of Variables in the Model of Community College Student Persistence

	SES	SEX	MARITAL	AGE	GOAL	ACINT	CONS	SUPPORT	SOCINT	SATISF	UTILITY	PERSIST
SES		.006	-.017	-.091	.020	-.019	-.245	-.267	.050	.000	-.044	-.015
SEX	-.062		.092	-.032	-.184	.245	-.026	-.065	-.031	.096	.092	.064
MARITAL	-.097	.048		.642	-.004	.142	.019	-.012	-.054	.039	.046	.048
AGE	-.185	-.023	.584		-.018	.070	.006	.020	.023	.018	.051	.052
GOAL	-.002	-.114	-.014	.018		.039	.058	.062	.091	.023	.034	-.012
ACINT	.040	.084	.169	.092	-.025		.089	.108	.176	.230	.254	.289
CONS	-.126	.020	-.067	-.072	.041	-.115		.654	.045	-.069	.008	-.003
SUPPORT	-.208	-.041	-.060	-.024	.077	-.011	.491		.079	.022	.042	.035
SOCINT	.075	-.124	-.007	-.026	.101	.212	-.001	.080		.111	.188	.198
SATISF	-.083	.093	.124	.103	-.047	.186	-.074	-.056	.137		.281	.261
UTILITY	-.128	.082	.159	.099	.046	.264	-.019	.065	.193	.203		.282
PERSIST	-.096	.062	.002	.065	.010	.374	-.031	.115	.133	.163	.348	
WHITE												
MEAN	.013	1.537	1.047	3.476	3.496	.065	1.765	1.159	6.922	2.388	2.436	.824
SD	2.291	.499	.212	1.167	1.885	1.676	.589	2.800	.927	.699	1.042	.381
NONWHITE												
MEAN	.067	1.520	1.083	3.920	3.777	.068	2.022	1.107	6.860	2.303	2.457	.757
SD	2.367	.500	.277	1.571	2.126	1.605	.633	2.589	.926	.627	1.035	.430

Correlations above the diagonal are for whites (N = 910)

Correlations below the diagonal are for nonwhites (N = 300)

TABLE 3
STRUCTURAL EQUATIONS - WHITE

	SES	SEX	MARITAL	AGE	GOAL	ACINT	CONS	SUPPORT	SOCINT	SATISF	UTILITY	R^2
ACINT	-.015 (-.020)	.840** (.250)	.935** (.118)	.002 (.001)	.077* (.086)							.082
CONS	-.064** (-.249)	-.023 (-.020)	.126 (.046)	-.023 (-.045)	.018 (.058)							.066
SUPPORT	-.372** (-.268)	-.287 (-.051)	-.183 (-.014)	.009 (.004)	.086 (.058)							.079
SOCINT	.020 (.050)	-.013 (-.007)	-.307 (-.070)	.023 (.028)	.044** (.089)							.014
SATISF	-.004 (-.014)	.073 (.052)	.058 (.018)	-.004 (-.006)	.007 (.021)	.085** (.204)	-.185** (-.156)	.024* (.095)	.057* (.076)			.074
UTILITY	-.023 (-.050)	.109 (.052)	-.033 (-.007)	.037 (.041)	.013 (.024)	.132** (.212)	-.082 (-.046)	.009 (.025)	.172** (.153)			.093
PERSIST	-.002 (-.010)	-.013 (-.017)	-.009 (-.005)	-.010 (-.031)	-.008 (-.041)	.044** (.195)	-.013 (-.020)	.001 (.005)	.049** (.019)	.085** (.156)	.061** (.167)	.169

Betas in ( )

** $p < .01$
* $p < .05$

TABLE 4
STRUCTURAL EQUATIONS - NONWHITE

	SES	SEX	MARITAL	AGE	GOAL	ACINT	CONS	SUPPORT	SOCINT	SATISF	UTILITY	R^2
ACINT	.042 (.63)	.252 (.079)	.965* .166)	.009 (.088)	-.010 (-.013)							.038
CONS	-.038* (-.143)	.020 (.016)	-.080 (-.035)	-.032 (.079)	.013 (.043)							.028
SUPPORT	-.243** (-.223)	-.270 (-.052)	-.574 (-.061)	-.050 (-.030)	.000 (.000)							.053
SOCINT	.025 (.064)	-.207 (-.112)	.087 (.026)	-.020 (-.034)	.039 (.090)							.028
SATISF	-.026 (-.097)	.104 (.083)	.131 (.058)	.016 (.041)	-.014 (-.046)	.053* (.135)	-.033 (-.034)	-.015 (-.061)	.093* (.137)			.079
UTILITY	-.055* (-.126)	.164 (.079)	.424 (.133)	-.004 (-.006)	.023 (.047)	.134** (.208)	-.056 (-.034)	.022 (.055)	.178** (.159)			.132
PERSIST	-.010 (-.053)	.020 (.023)	-.229* (-.148)	.022 (.082)	.002 (.008)	.082** (.308)	-.037 (-.054)	.019 (.115)	.004 (.009)	.041 (.060)	.104** (.251)	.240

Betas in ( )

** $p < .01$
* $p < .05$

TABLE 5
INDIRECT AND TOTAL EFFECTS OF PREDICTOR VARIABLES

VARIABLES		WHITES		NONWHITES	
		INDIRECT	TOTAL	INDIRECT	TOTAL
1.	SES	-.000 (-.001)	-.002 (-.011)	-.005 (-.029)	-.015 (-.082)
2.	SEX	.062** (.081)	.049 (.064)	.034 (.040)	.054 (.063)
3.	MARITAL	.034 (.019)	.025 (.014)	.139* (.089)	-.091 (-.058)
4.	AGE	.004 (.013)	.015 (.045)	.001 (.003)	.023 (.085)
5.	GOAL	.009* (.042)	.000 (.001)	.001 (.007)	.003 (.015)
6.	ACINT	.015** (.067)	.060 (.262)	.016** (.060)	.099 (.368)
7.	CONS	-.021** (-.032)	-.034 (-.052)	-.007 (-.011)	-.044 (-.065)
8.	SUPPORT	.003 (.019)	.003 (.024)	.002 (.010)	.021 (.125)
9.	SOCINT	.015** (.038)	.065 (.157)	.022** (.048)	.027 (.057)
10.	SATISF		.085 (.156)		.041 (.060)
11.	UTILITY		.061 (.168)		.104 (.251)

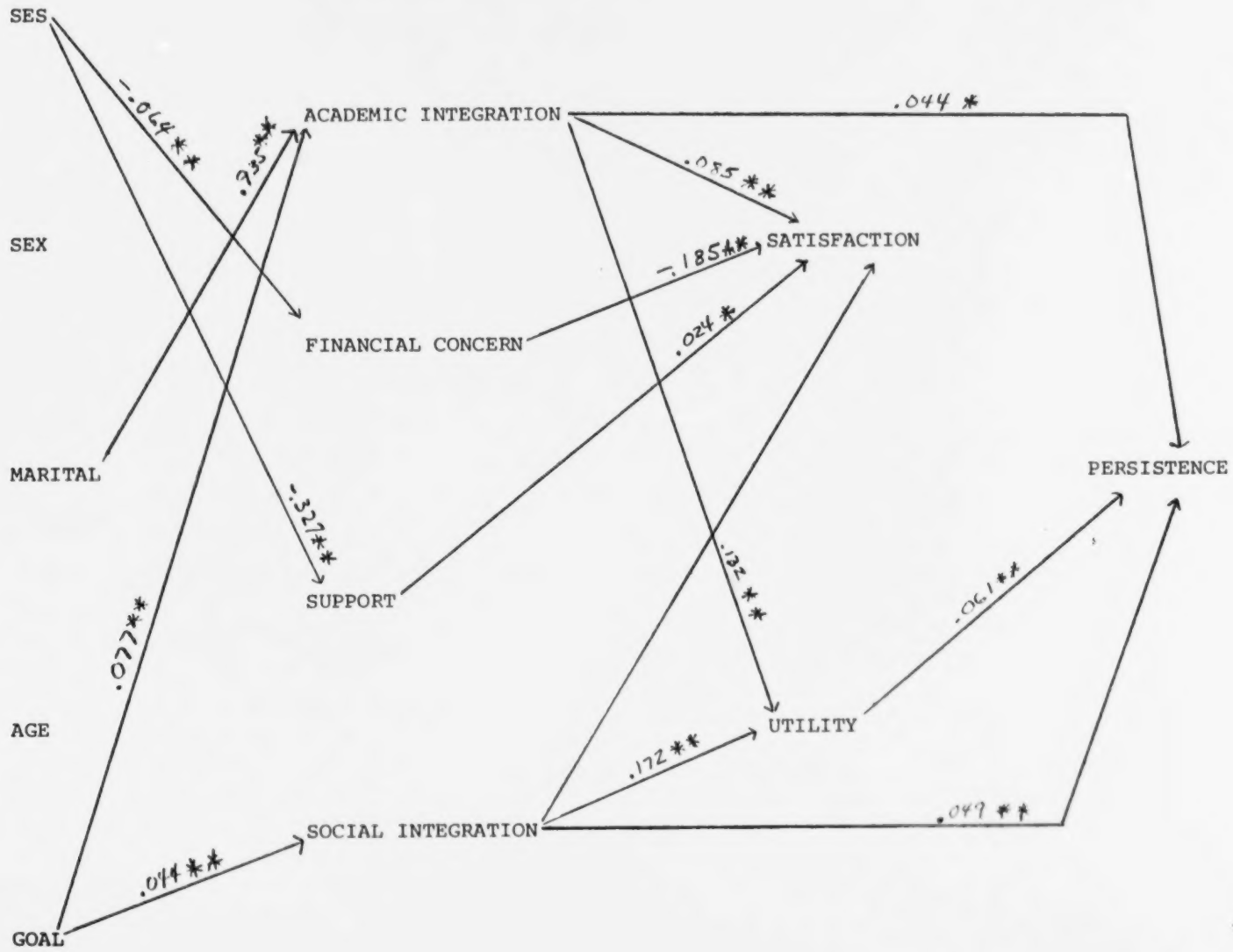
NOTE: Standardized effects are in parenthesis.

** p .01
* p .05

FIGURE 1

WHITE MODEL

DIRECT EFFECTS

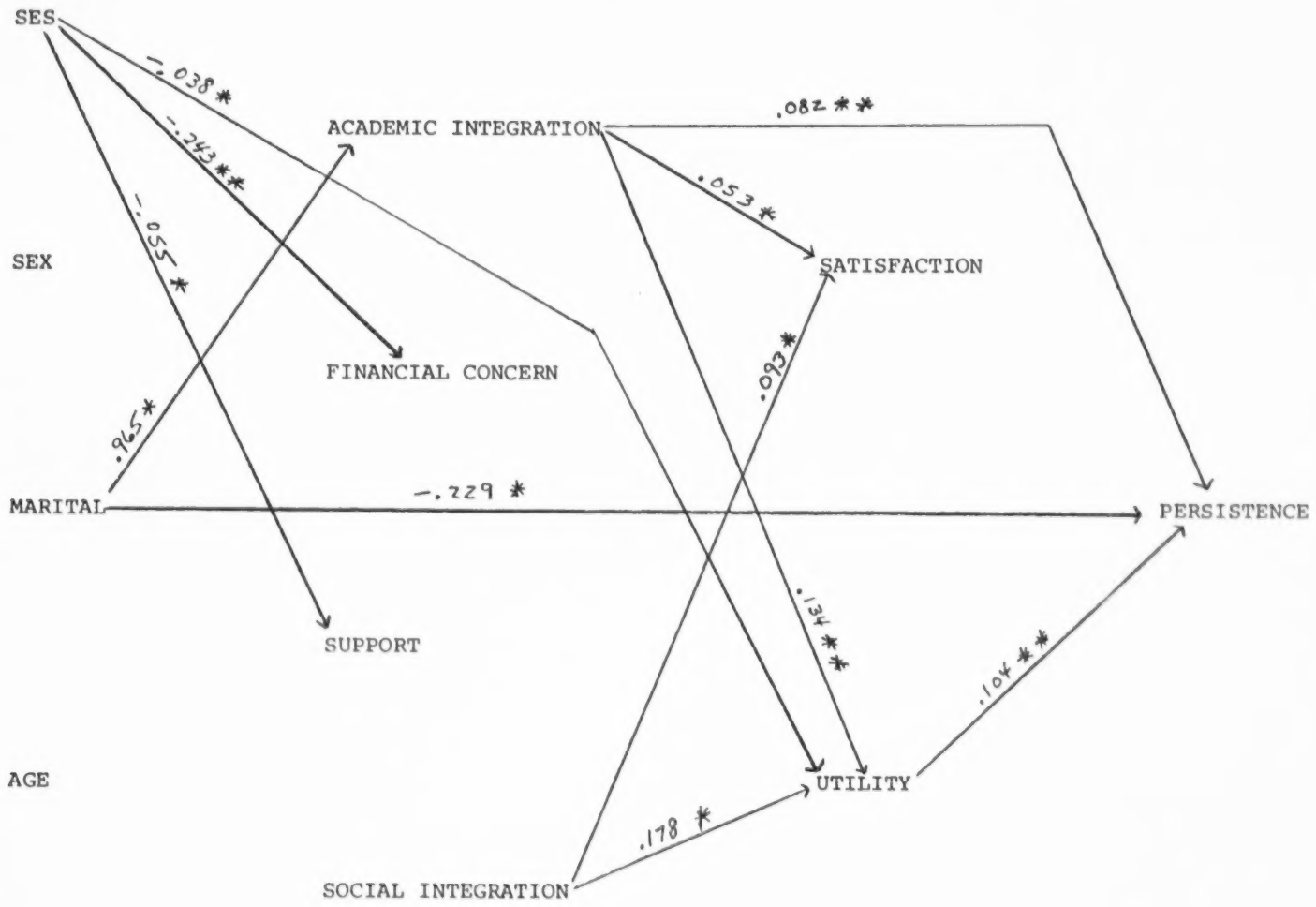


** p < .01
* p < .05

FIGURE 2

NONWHITE MODEL

DIRECT EFFECTS



** p < .01

* p < .05